



Vermont Energy & Climate Summit
“Meeting Vermont’s 2025 Energy & Climate Goals”

*****Pitch Submission Form*****

Let your ideas be heard!

*This is your chance to get your energy or climate pitch
in front of 200 of Vermont’s energy leaders and the Governor’s Climate Action Commission*

Vermont has a bold goal: to meet 90% of our energy needs through increased efficiency and renewables by 2050. We have also joined leading states across the country in a bi-partisan commitment to adhere to the Paris Climate Accord goals. Where are we now on achieving those goals and what can we do to bend the curve toward 2025 milestones along that path?

- **Energy:** The first milestone of Vermont’s Comprehensive Energy Plan is to meet 25% of Vermont’s total energy needs from renewable sources by 2025. The most recent status estimates put us at around 16% across heat, electricity and transportation (2016).
- **Climate:** The Paris Accord goal seeks a reduction in greenhouse gas (GHG) emissions of 26-28% from 2005 levels by 2025. Vermont’s own statutes are even more ambitious: 50% reduction from 1990 levels by 2028. As of 2013, Vermont’s GHG emissions decreased 11% from 2005 levels and actually *increased* 4% from 1990 levels.

Pitch Invitation

We have a lot of work to do over the next 8-10 years. That is why we want to ***hear your pitch*** for promising opportunities to help Vermont meet its 2025 goals. What will help bend the curve?

Selected proposals will be invited to present at the Vermont Energy and Climate Summit co-hosted by [Energy Action Network](#) (EAN) and the [VT Climate Pledge Coalition](#) (VCPC) on November 8th at Champlain College in Burlington. Please submit your pitch by using the form below and emailing completed proposals to jduval@eanvt.org by **Friday October 20th**.

(NOTE: Regardless of whether you are invited to present on Nov.8th -- notification will come by Wed. Oct. 25 -- *all submitted and complete proposals will be included in a full compilation to be submitted to the Governor’s Climate Action Commission and the Vermont Legislature.*)

Vermont Energy & Climate Summit Pitch Submission Form

Guiding Criteria: EAN’s mission is to end Vermont’s reliance on fossil fuels *and* to create efficient, clean, affordable, and secure electric, heating, and transportation systems for the 21st Century. The VT Climate Pledge Coalition is seeking pledges to reduce GHG reductions that will help Vermont meet Paris climate commitments. Together, we support the criteria outlined in Gov. Scott’s Executive Order creating the **Vermont Climate Action Commission**, specifically that solutions must:

- Spur economic activity, inspire and grow Vermont businesses, and put Vermonters on a path to affordability;
- Engage all Vermonters, so no individual or group of Vermonters is unduly burdened; and
- Collectively provide solutions for all Vermonters to reduce their carbon impact and save money.

With these goals and criteria in mind, please answer the questions below. Questions 8-12 can be answered individually or in one comprehensive narrative. (Total pitch submission **no more than 3 pages**).

1. **Pitch Submitted By (Your Name or Organization):** DYNAPOWER
- 2.
3. **Contact Email Address:**
Rmorin@dynapower.com
4. **Contact Phone Number:**
802.999.1566
5. **Pitch Title:** Incenting Solar Plus Energy Storage to Reduce the State’s Carbon Footprint and Power Vermont’s Economy
6. **Pitch Summary:** By financially incenting the widespread installation of energy storage with utility-scale solar installations, commercial and industrial buildings and in residences across the state Vermont could reimagine its aging grid, rapidly ramp up renewable energy integration and distribution, save ratepayers and business owners tens of millions of dollars and help accelerate and transform Vermont’s economy.
7. **What energy sector(s) does this Pitch apply to? (Check all that apply):**
 - Energy Efficiency
 - Electricity
 - Transportation
 - Thermal Heating &/or Cooling
 - All (Total Energy)
 - None: Non-energy related carbon reduction proposal
8. **Which criteria category(ies) does it address? (Check all that apply):**

- X Economic Activity
- X Affordability
- X Vulnerable Vermonters
- X Other

9. **Scale of impact on Vermont’s energy and climate goals:** If this proposal came to fruition, how might it move the needle in helping to meet Vermont’s energy and climate goals by 2025 and/or 2050? Please outline assumptions and, if available, provide calculations. See below

10. **Benefits/costs of this proposal for Vermont and Vermonters:** Including, where possible, economic, financial, social, and environmental. See below

11. **Decision-makers necessary for this proposal to be adopted or move forward (e.g.,** Legislature, Governor, a regulatory agency, a business, organization, media outlet, or financing institution, etc.) See Below

12. **Strategy and key considerations:** Outline the overall strategy, including gaps, barriers and opportunities for moving this proposal forward. See Below

13. **Timeline:** To meet our 2025 goals, we need some proposals that can be implemented in the next couple of years as well as some “game changers” that will bend the curve even further out. What timeline do you foresee for your proposal to be developed and implemented? See below.

DYNAPOWER PROPOSAL

The state of Vermont has a tremendous opportunity to meet the goals set forth by 10 V.S.A 580a to both spur economic growth and reduce greenhouse gases within the state by prioritizing and financially incenting the development of utility scale solar plus energy storage installations as well as commercial & industrial sited solar plus energy storage.

California has adopted such an approach to reach its goals of 60% renewables by 2030 and 100% renewables by 2045. To date, the results have nothing been short of remarkable with both tens of GWs of renewable energy and hundreds of megawatts of energy storage deployments being installed across the state in residential, commercial and industrial and utility scale applications across the state. Between 2010 and 2015 solar

energy generation increased by over 1,700 percent and renewable electricity accounted for almost 22 percent of all of California's electricity generation in 2015. From 2014 to 2015, renewable energy generations increased by over eight percent overall with solar power rising by over 40 percent in California.

Importantly, the California Green Innovation Index Report also shows that with a push towards renewable energy, job and economic growth aren't hampered. In fact, it's quite the opposite. Since [California's](#) climate law was passed in 2006, the state's GDP has increased by nearly \$5,000 per person — which is double the increases the US achieved as a whole. Job growth in California was also stronger than the rest of the country by about 27 percent. These achievements were accomplished all while reducing per capita emissions by 12 percent and carbon-intensity by 4.5 percent.

If supported through proven forward-thinking legislation in Vermont — reducing our greenhouse gas emissions and powering our economy — could be achieved similarly to California through incenting solar plus storage installations across Vermont. State legislated incentives could take the form of subsidies, tax credits, low interest loans or pursued through a combination of means that make installing solar plus storage highly attractive to the end user.

Such installations would harness the energies of the sun to power facilities statewide as well as safely and reliably integrate that energy into the grid to power homes and facilities across Vermont. Furthermore, these same systems could provide invaluable back up power at critical facilities throughout the state during times of grid interruption as is the case with Green Mountain Power's Stafford Hill Solar Plus Storage installation.

Increasing penetration of solar installations in Vermont at scale will require energy storage. A key limiting factor for large scale PV deployment in California has been curtailment, or the PV energy that would need to be rejected by system operators due to the supply/demand balance of the state's grid. As California has ramped up production of PV generated energies moving toward its goals of renewable penetration, curtailment — limiting or eliminating the injection of solar generated energies into the grid for periods of time — has increased. Energy storage can help better balance the grid, according to NREL (National Renewable Energy Laboratory).

[A recent NREL study](#) modeled several scenarios for the amount of energy storage needed in California to reliably integrate increasing solar power on the grid. The report noted to meet a 50 percent photovoltaic threshold economically will require California to added 15 gigawatts of energy storage by 2030. Adding this additional storage not only helps minimize curtailment, in doing so it keeps solar cost competitive with other forms of energy generation most notably thermal peaker plants. According to NREL, without adding storage, PV penetration potential reaches its limit at 32 percent whereas adding the 15 GW storage extends safe and reliable solar penetration to the 50 percent levels.

Vermont's efforts to shift from fossil fuels to renewable energy are already paying dividends, leading to a No. 2 ranking in the United States for transforming to clean power, according to the Union of Concerned Scientists Report. Today Vermont has 10 times the amount of solar it did in 2010 and 20 times the wind energy. It has been ranked second in the nation for solar jobs per capita.

Vermont is on its way towards its goals of greenhouse gas reductions but much more can and needs to be done. Because of the intermittency of solar (and wind power) energy storage must play a role in ensuring the safe and reliable integration of renewables into the grid.

Today, energy storage is widely accepted as the enabler to the successful integration of renewables into the grid by utilities and government agencies. Renewable energies generated during the day can be stored in safe, reliable lithium-ion batteries to be utilized at night when demand is the greatest. In addition to harnessing and distributing energy at needed and appropriate times, it would enable Vermont to reimagine its grid while weaning the state off of fossil-fueled generated energies. Strategically placed energy storage both utility and commercially and industrial sited will allow for the state to not only integrate more renewables within its grid but to reimagine our grid in ways that make it more resilient and flexible while costing hundreds of millions dollars less to modernize than traditional transmission and grid upgrades that would be required over the course of the next decade.

Green Mountain Power – the state’s largest utility — is recognizing this future with the installation of its second utility scale energy storage installation in Panton Vermont in 2018. Dynapower in addition to supplying over 375MW of energy storage inverters worldwide has its own commercially sited energy storage system at our South Burlington, Vermont facility. Our system, designed and manufactured in Vermont, not only reduces our energy consumption from the grid, it reduces our energy bill and provides critical back up power when needed. Such Dynapower systems can and will be sited at commercial and industrial buildings around the globe.

The installation of such solar plus storage systems could be quickly increased through statewide legislations that financially incentivize utilities, commercial and industrial building owners and state residents to install such carbon reducing systems.

Unlike traditional grid infrastructure upgrades that will be required to integrate the ever increasing load of renewables on our grid, energy storage is extremely flexible and can be quickly deployed at a fraction of the cost.

- Energy Storage Systems (ESS) have minimal impact property values and are often installed at substation and existing grid facilities as well as commercial and industrial facilities.
- Storage systems can be designed, built and operational in under six months.
- ESS can be deployed in modular capacity increments to allow for additional sizing to accommodate growing renewable integration
- In addition to allowing for the safe and reliable integration of renewables into the grid, ESS can generate revenues by providing frequency regulation, voltage support, spinning reserves, and other value-added services.

By adopting a system of energy storage systems at industrial facilities, hospitals, schools, public buildings, etc. all tied to renewables and connected by distribution software, virtual plants of energy can be created throughout Vermont — allowing rate payers to reduce their energy bills and the state to aggregate its renewables penetration for the larger good — further reducing the state’s reliance on greenhouse gas emitting fossil fuels. (Last year, Green Mountain Power ratepayers were saved over \$200,000 in a single hour through by the Stafford Hill Solar Plus Storage Installation reducing peak power demand.)

Recent studies by NREL (National Renewable Energy Laboratory) indicates that currently over 10,000 commercial and industrial buildings within Vermont would benefit from the installation of energy storage to reduce peak demand charges.

As outlined above to hasten the integration of energy storage and renewables with the state’s grid, it is proposed the state incentivize the integration of renewable energy and energy storage as California has done with its [Self-Generation Incentive Program](#). The program rewards developers of renewables and energy storage aimed to reduce the state’s carbon emissions with financial incentives. The incentives under California law are allocated to renewable and energy storage projects across the state through a rigorous application program.

Such a program would not only help reduce the state’s greenhouse gas emissions, it would be a boost to the Vermont economy. In addition to reducing use of fossil fuels and greenhouse gas emissions energy storage combined with solar installations would create jobs in Vermont. As is the case of California law, companies located in Vermont are given favor in the application process for incentivized proceeds. Several companies in Vermont — Dynapower, Northern Reliability and Northern Power, currently design, build and install utility scale and commercial and industrial energy storage worldwide. Additionally, there are numerous solar developers, designers and manufacturers throughout the state who would benefit from such an incented program for the deployment of renewable energies and energy storage throughout the state.

Such a proposal to mandate and incent the installation of renewable energies and energy storage, would require the support of the legislature, the governor’s office, and the state’s utilities. But if achieved, technologies developed within the state by Dynapower and others, could quickly couple energy storage with existing utility scale solar and wind installations to increase energy production, efficiency and integration of renewables with our grid; and provide turn-key solutions for commercial and industrial facilities looking to add energy storage to reduce electricity bills, bring on invaluable back up power and reduce their carbon footprint.

Furthermore, these same technologies could be exported beyond Vermont potentially generating hundreds of millions of dollars in annual revenues for Vermont businesses, and expanded taxable monies for the state. Such innovation and activity would attract new residents to the state to fill necessary jobs looking to tackle not only Vermont’s energy transformation, but the world’s as well. More importantly, the technology of

energy storage must and will be a part of Vermont's push for a more sustainable and less environmentally impactful power grid.

Thank you for your time and consideration.